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Drawn on Stone by C. Hullman

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THE *Art* OF
DRAWING on STONE,

*giving a full explanation of the
Various Styles,*

of the different methods to be employed to

ENSURE SUCCESS,

*and of the Modes of Correcting, as well as
of the Several Causes of failure*

BY

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OF PACKING STONES.

THE ART

OF

DRAWING ON STONE.



1. **BEFORE** I enter into the minutiae of the precautions to be taken in drawing upon stone, I think it necessary to say a few words on the mode in which a series of impressions is obtained. The lithographic stone the most in use, and which answers the purposes of the art the best of any, is a calcarious stone, obtained from the banks of the Danube, in Bavaria. It unites the qualities of purity, whiteness, and hardness, in a greater degree than any which have been discovered in other countries; * in common, with stones

* I have the authority of Professor Buckland (and that is no mean one) to say, that there is not in Great Britain, any known stone of a quality similar to the Bavarian, nor is there any reason for hoping to find any. There is a magnesian

of a similar nature, it imbibes both water and grease with avidity, and it is solely on this last property that lithography is founded: for when a series of lines, of a greasy nature, are traced upon a piece of this stone, and the whole afterwards wetted, it is clear that so long as the stone is damp, if a roller covered with a greasy ink be applied to its face, this greasy ink will have more affinity for the fat lines, previously traced on the stone, than for those parts of the surface which are wet, and not greasy.

2. The possibility of obtaining a series of impressions depends thus, merely, on the application of grease to the surface of a substance always ready to receive and retain it with avidity. If a part of the stone has received grease, as two, it will retain in that spot the power of receiving, from a greasy roller, grease, as two, and preserve that property (in

lime stone, on the coast of Durham, splitting in strata, and similar in outward appearances; but it does not answer the purposes of Lithography. We have, also, the white lias, of Bath, which is too soft and porous, and the brown lias, of Warwickshire; this latter is so dark, when wetted, that it is almost impossible to see the drawing: neither of these split in smooth and even strata, like the German stones, but require so much labour to bring them to a level and smooth surface, as to become more expensive than the Bavarian ones, besides being far inferior—indeed, totally unfit for chalk drawings.

good printing at least) for a great length of time; those parts which have received in the first instance grease, as ten, will receive, and transmit it as ten, &c.

3. Thus a portion of grease, or greasy dirt, however small, applied to any part of the surface of the stone, will continue to transmit impressions, the intensity of which, will be proportionate to the quantity of grease previously applied. Let this axiom be well remembered, and laid in store by all those who wish to be successful in drawing upon stone; for if they always bear this law in mind, while they are making a drawing, they cannot fail to produce a plate which will print well.

4. The process of printing from stone, is now so generally known, and understood, that it may appear useless to repeat what I have said above; but I think that I cannot lay sufficient stress on that fundamental principle of Lithography, for, well as these rules are known, they are still continually forgotten by artists, who think that, provided the drawing they have executed looks well to the eye, they have done all which is necessary, and that the printer must, and can, do the rest; forgetting that the face of the stone has, perhaps,

been soiled during the execution of the drawing, either by chalk cuttings, by rubbing with paper kept under the hand, by perspiring fingers, and many other causes of failure, which we shall mention hereafter, several of which occasion spots, that disappear the moment they have soiled the stone, to reappear again, infallibly, in the printing. The artist is, of course, surprised at seeing all those spots come forth, and accuses the printer of that, which proceeds entirely from his own want of care.

5. It is clear that, were it not for the black contained in the chalk, an almost invisible drawing might be made on stone, which would come forth only in the course of printing; and this is the case with those spots which do not form part of the drawing, and have taken place from negligence; as they do not shew, the artist considers them of small importance, and, entirely taken up with the drawing he is executing, he hopes, and thinks, that nothing will print, but what he intends should print. I must therefore again repeat, and enforce, this plain truth, that a lithographic stone absorbs, with avidity, *any* grease applied to its surface, and consequently that *any* dirt, or grease, so applied, will come forth in the printing, as

well as that grease which is intended to constitute the drawing.

OF POLISHED AND GRAINED STONES.

The two principal styles used in Lithography, are the Ink and the Chalk style.

6. Ink drawings are generally made on *polished* stones, as the grain necessary for a chalk drawing, makes it unpleasant to draw with the hair pencil, or the pen. Some persons, from ignorance, have often made chalk drawings on a polished stone; these *invariably fail*, as a stone with a proper grain is the first requisite for the success of a chalk drawing.

7. It is of the greatest importance that the grain of a stone for a chalk drawing be not too fine, and a little practice will very soon shew the artist which is the proper grain; for if too coarse, the drawing, particularly the delicate tints, will look sandy and open, and the execution will be attended with great trouble, particularly in making out the minute parts. On the other hand, if the grain be too fine, the chalk slips, and draws greasy, the stone does not appear to bite, and there

is a difficulty in producing dark tints. Moreover, in the printing, the darker parts soon clog up, and from the stone approaching the polished state, the delicate tints do not hold, and soon break up. The ease with which chalk works on a well grained stone, will soon teach an artist to know when the grain is as it ought to be, and its pleasantness is such, as to make drawing with pencil on paper appear afterwards meagre and poor; for there is a richness and fulness in drawing on a good stone, which, from the nature of the material, has more the feel of painting with a brush, than of drawing with chalk. I mention this circumstance, as this peculiar feel is the best criterion to judge of the right grain of a stone.

8. There is no difficulty in ascertaining the proper preparation of a polished stone, as it is sufficient that the face be well smoothed, and free from scratches.

9. This last defect is also to be avoided in a grained stone, as scratches are often produced by a coarse grain of sand, which invariably print as a white hair line.

10. Although, as I have said above, it is impossible to draw with chalk on a polished stone, ink may be, if employed

with judgment, applied with great advantage in chalk drawings. I will treat this subject more in detail hereafter.

11. The best way to see the grain of a stone, is, to incline it to the horizon, nearly at an angle of 45 degrees; by varying the position slightly, above and below this angle, a certain point will be found, at which the light will catch all the little asperities, and shew the grain very distinctly. An artist who will take the trouble to do this with every stone he works upon, will learn to know by eye, whether the grain is too fine, or too coarse. I have given, in plate 1, fig. 9, a magnified representation of this effect, in order to be more clearly understood.

12. Portraits, however, admit of, and even require a coarser grain than landscape, particularly if drawn in the stippled manner; success is more certain, and the impressions will possess a degree of brightness, which can never be attained with a finer grain. By employing a sharp pointed pencil for the more delicate tints, and occasionally opening, and picking with a needle those small specks, which occur in working on a coarse stone; a clever artist can produce drawings, which bear being placed next to the best specimens of copper-plate engraving.

13. It must, however, be well borne in mind, as a most important rule, that in every case, whether figures or landscape, a coarse grained stone is by far a less evil than too fine a one, as a failure is often the consequence of too fine a grain, whereas, a little more trouble in the execution of the drawing, is the only risk which the artist runs in working on a coarse grain.

OF THE MODE OF SUPPORTING THE HAND WHEN DRAWING ON STONE.

14. Most persons, when they draw upon stone, content themselves with keeping a sheet of paper under their hands—this is the very worst plan which can be adopted; for the paper takes up numberless microscopic particles of chalk from the dark touches of the drawing, and deposits them again on other parts of the stone, some of which are often intended to be bright lights: this, in the impressions, invariably produces a tint, particularly towards the bottom of the drawing, and always shews more when printed, than it did in the first instance, when still in the hands of the artist.

15. A number of loose portions of chalk are also unavoidably laying on the face of the stone—these are taken up by the paper, to which they often, from the heat of the hand which is laying over it, adhere very strongly; every time the paper is shifted, each little piece of chalk prints or marks a spot on the drawing; thus every loose bit of chalk so adhering to the paper, will print twenty and more spots, which afterwards can only be taken out by the printer, to the great injury of the drawing. (132.)

16. The lower part of the drawing, plate 11. at A.A., will shew the consequence of not attending to this precaution. The drawing was executed with a piece of paper under the hand instead of a bridge; a tint will be perceived all over that part of the drawing (14), as well as several black spots, marked *a. a.*, produced by the loose portions of chalk which have adhered to the paper (15). The tint (14) which naturally must be spread all over the lower portion of the stone, may easily be removed by the printer, as far as concerns the margin of the subject, but cannot be destroyed in those parts of the stone which contain the drawing. I have purposely left the tint wherever it was produced, to enforce.

still more the importance of attending to this advice; for let it be well recollected, that the more elaborate the drawing, and consequently the greater the length of time it has taken, the deeper the tint produced by the paper will be, and the more the evil will be increased.

17. It is indispensable to use a bridge for drawing on stone. I have found, by experience, that the best sort is the one represented in plate I. fig. 10. B.B. is a bridge of mahogany, beech, or some other hard wood, high in the middle, so as to be about half an inch thick in the thickest part, an eighth of an inch towards each edge, and 22 or 23 inches long. One end has a thin slip of wood, A.A. glued across it, having a shoulder, *a*. about an eighth of an inch in thickness, projecting from A.A. the whole breadth of the bridge, and underneath it. The intention of *a*. is to keep the bridge always at a distance from the face of the stone, while the part A.A., catching the edge of the stone, hinders *a*. from slipping over the drawing. With regard to the other end of the bridge, in order to enable it to fit every sized stone, the part corresponding with A.A. and marked in the figs. 10. and 11. K. and K.K. is made moveable in a groove, *f.f*. K. if fixed to the bridge, B.B. by a

screw, *d.* having a broad head, so as to project beyond the groove, *f.f.* and when screwed tight, to render K. immoveable. K. has also a shoulder, *i.i.* fig. 11., corresponding with the shoulder, *a.* of A.A. fig. 10., so that when A.A. is placed against one end of the stone, and K. against the other, if screwed tight to the bridge, this latter is an eighth of an inch from the face of the stone, without touching it in any part, and the loose bits of chalk lying on the drawing, may at any time be brushed off without injuring it. When K. is fixed, it is better to allow it a little play, to enable the bridge to move up and down the stone without difficulty. By adopting this plan, drawings which cost a month's labour may be executed without any fear.

18. It is necessary, however, to keep the stone well covered, particularly when not worked upon; and this is chiefly necessary in London during the winter, when the air is so loaded with smoke, that, unless carefully covered, stones are often liable to take a grey tint all over, when proved. I use myself a more complicated desk, which offers more comforts, and the means of keeping the drawing covered, when not at work; but such a desk is expensive, when com-

pared with the above-mentioned bridge, which, particularly to those who follow drawing on stone merely as an amusement, answers every purpose sufficiently well.

OF CLEANING THE STONE WHEN MAKING A CHALK DRAWING,

19 As the stone is often covered with loose bits of chalk, it is both convenient and necessary to get rid of them, as well as of the dust which occasionally settles on the drawing, and produces a disagreeable grating, instead of the rich feel which chalk has when the stone is clean: a large and clean brush of badger's hair, is the best tool to employ for this purpose; great care must be taken, however, not to brush too hard, as the ends of the hairs might thereby get charged with chalk, and brush a tint over parts intended to be light and clear. It is safer to wash the brush occasionally in warm soap and water, and afterwards to rinse it well in boiling water, otherwise the brush, containing a portion of soap, will introduce more spots in the drawing, than it is intended to remove.

20. When loose bits of chalk lay on the stone, they must always be brushed, and *never blown off*. This last mode of removing them, which is repeatedly resorted to, is the occasion of very disagreeable consequences, and of a species of failure, which is almost always imputed to the printer by the artist, who generally declares, that he is *quite certain*, that no spots of spittle have fallen on the stone. When a person blows on a stone, it almost always happens, that small portions of saliva fly out of the mouth, and wherever these portions of saliva fall on the stone, white spots are the certain consequence—see plate 11, letter *b*. It rarely happens, that the artist sees them fall; his eye being intent on the piece of chalk he wants to remove, he does not perceive the minute portions of saliva which fall on a distant part of the stone, and which being absorbed, dry the instant they reach the drawing; the artist is satisfied that nothing has happened, and is astonished to find in the impressions a number of white specks, some of which are of a considerable size, appearing in various parts of the drawing—he declares he has not made them, and that it must be the printer, in preparing the stone. Now, saliva acts on the stone as gum water would do, serving as a coating

between the stone and the chalk, and hindering the grease of the latter from being absorbed by the former: such being the case, it is clear that when once the drawing is completed, it might be covered all over with portions of saliva without injuring the drawing in the least, or producing a single spot. Coughing, also, and sneezing near a drawing, not completed, must be avoided, for many spots of saliva may thereby be thrown on the stone; turning the head aside, is the only trouble which such a precaution can give to the draftsman.

PRECAUTIONS TO BE TAKEN BEFORE A CHALK DRAWING IS BEGUN.

21. As in graining the stone, a portion of dust will always remain on its surface, notwithstanding the washing previously performed by the workman, this dust existing between the chalk of the stone itself, will hinder many portions of the pencil from adhering properly, and thereby occasion some of the tints to be rotten. It is prudent, consequently, on the part of the draftsman, either to wash the stone well in pure water, or to rub the face with a piece of

clean flannel, and afterwards to brush off the dust: great care must be taken not to begin the drawing until the stone be perfectly dry.* These directions refer solely to grained stones, polished stones requiring a mere wiping with a clean cloth or brush.

OF TRACING THE DRAWING.

22. As it is very difficult to alter any part of a drawing, and it is almost always necessary to execute it reversed on the stone, in order that it might print the right way, it is requisite to have a correct outline. If any parts be made out on the stone with a lead pencil, it must be drawn with a very hard one, and the line must be extremely fine and delicate; otherwise, if a thick line be drawn, the portions of lead existing between the face of the stone and the chalk, will hinder the latter from adhering, and a white line will appear where the lead pencil had been applied. See the effect in plate 11. letter *c.c.c.*

* When stones are obtained from my establishment, the washing above-mentioned must on no account be used, as these stones have a facing or wash given to them, which, by such an operation, would either be destroyed, or made to run; mere cleaning with the brush is all that is necessary.

23. The best method to follow is this: having made a correct outline of the subject on paper, take some French tracing paper, (never use in any case oiled or varnished paper), and place a piece over the outline; as this paper is transparent, the whole drawing will be seen through. You may now trace an outline either with soft lead pencil, (if a chalk drawing is intended), or with red chalk (if an ink drawing). This outline, when completed, must be placed on the stone true and square, another piece of thick paper placed over the whole, and this latter piece well rubbed (without shifting) at the back, with a piece of ivory or the handle of a knife, when the entire outline will be found to be transferred, reversed on the stone.

24. I have said above, that the outline on the French tracing paper must be made with red chalk, if an ink drawing is the object; because black lead, however soft, comes off with great difficulty on a polished stone, whereas red chalk comes off very easily.

25. The method given above is very convenient when the subjects are small; but when they are above eight or nine inches in length, and accuracy is required, it is unsafe to

follow it, because the paper extends by rubbing, and a double, or at least a thick and blurred outline, is the consequence. When the drawing is large, the tracing paper must be placed over the original outline, and the lines drawn with a pen and indian or common ink, and the upper face (of this tracing) or side on which the ink lays, be rubbed over with a piece of cotton and black lead, or red chalk (24); the overplus of the dust must then be well shaken off, and the face of the paper, thus rubbed, laid on the stone, so that the ink outline (which is clearly seen through) be the reverse of the original; these lines must be carefully gone over with a blunt etching needle, when a pure outline will be found traced on the stone. As soon as the lines have all been gone over, the paper may be pulled up, and the face of the stone being well brushed, is ready to be commenced upon with the drawing.

26. Another method, that answers extremely well, and saves the two tracings which must be made by following direction (25), particularly for intricate architectural subjects, is (after the tracing is made according to direction 23,) to damp the paper with a sponge, and then fix or strain it on

the stone, (putting, of course, the traced side downwards) with indian or common glue, taking great care to put none on the part of the stone which is to receive the drawing, but merely on the margin (28): this paper when dry will be strained extremely tight, and will bear rubbing (a sheet of paper being previously laid loose over it) without shifting or extending in the least, and a very pure outline obtained.

27. In order to copy the drawing, so that it might be reversed, the best method is to place the original drawing at the foot of, and before a looking glass, and copying from the glass, instead of consulting the drawing.

28. In placing the drawing upon the stone, it is very important to recollect that a space or margin of, *at least half an inch*, and more if possible, must be left between the extremities of the drawing and the edge of the stone, and a still larger space left at the bottom than at the top of the drawing, in order to have room for the writing, if any is intended to be placed under the subject; for, unless this be attended to, the drawing cannot be printed, and the whole labour of the artist is lost. It happens, however, that some stones have small black veins, like hair lines, which run across them,

as well as other little imperfections. The artist ought, therefore, always to take these defects (if existing) in consideration when he puts his tracing on the stone; for, often the drawing may be so placed, that these black veins (which are apt to print) are lost in the dark tints of the fore ground; or if there are detached and separate subjects on the stone, he may place these so that the veins should come between them, as in this case they are of little consequence: or else, if the stone is large enough to allow it, there is no absolute necessity to place the drawing in the middle, but it may be made on one side, so as to avoid the veins, &c.

OF THE TOOLS NECESSARY FOR DRAWING UPON STONE.

The common portcrayon is a very good instrument for holding the chalk, but, there are various other little inventions which greatly facilitate the operation of drawing upon stone, and I will enumerate the best in this chapter.

29. The portcrayon, fig. 5, plate 1, is a very good tool for producing the darker tints, and the firm touches; it is also

convenient for using up the pieces of chalk when too short to be held in the quills (30); but it is a heavy instrument, and it requires a very firm and steady hand to be able to produce delicate and even tints with it.

30. A piece of swan quill, about an inch long, fig. 3, is fixed at the end of a piece of cedar, or any light wood, the whole, when finished, must not be longer than four inches; the chalk being previously a little bevelled off, is run in at the quill end. This tool is by far lighter, and more pleasant to work with than the portcrayon; but, for some hands, is still too heavy for the lightest tints.

31. A long piece of cork, slit at one end, must have a circular groove scooped out with a pen knife at the end where the slit is, this groove is intended to receive the chalk, which is easily fixed by tying it with a piece of thread, see fig. 4. the extreme pliability of the cork, renders it impossible to produce any dark tints with it. This is a most excellent tool for producing the lightest and most delicate tints for skies, clouds, &c. with comparatively small trouble.

32. For picking and correcting, the best tool is the common etching needle, fig. 1. This tool must always be

kept extremely sharp at the point, for, if blunt, it will pick round white spots in the drawing, which have a very disagreeable effect, and can, if ever, be remedied with difficulty.

33. For scraping out lights, a mezzotinto scraper, fig. 2, is decidedly the best tool; this instrument requires, also, being kept extremely sharp.

34. I have also used often, and with great advantage, a mezzotinto grounder, for softening off lights, as the white lines produced by the teeth of this tool, soften the sudden sharpness produced by the mezzotinto scraper (33 and 62).

35. For ink drawings, the best instrument is the steel pen, fig. 7, plate 7, made out of watch springs; they are generally to be had at the various lithographic establishments. This little instrument, though a delicate one, may with care be made to last a long time: the simplest way to fix it, is by means of a piece of quill *a. a.* which keeps the pen tight on the stick it is first placed on; by this means, when worn out, it can be taken off and another fixed on in half a minute. As the least fall or blow can spoil the pen, a piece of the end of a quill, represented by the dotted line *c. c.*, must be placed over it (when not used) like a cap, which will preserve

it from all injury; it must, also, be carefully wiped before it is laid by.

The steel pen must never (on a grained stone particularly) be used backwards and forwards, or against the nib of the pen; this would spoil the pen, and, what is worse, cause it to spirt, and cover the drawing with small spots of ink. On polished stones, however, if the pen is rather stiff the touches may be given in any direction.

36. For very delicate, or for thick touches, a sable is often used with great advantage. For thick touches, the brush must be left in its natural state, see fig. 5, plate 7. But for fine touches it must be cut round with a pen knife, see fig. 6, so as to leave only a few hairs remaining.

37. The ink used for the brush is different from that used by the pen; the ink which is proper for the latter, not flowing freely enough from the brush: when using this latter tool, to freshen the ink, which soon ceases to run, a small piece of sheet lead, two inches square, is convenient; a drop of ink laid on it will afford a fresh supply to the brush, and, from its smallness, the piece of lead may be kept close to the part which is drawn.

38. The steel pen often refuses to give ink and to mark; to remedy this, on the margin of the stone, or on the little piece of lead above mentioned, the nib of the pen must be slightly bent inwards, by pressing on the back (as one does with a common pen when it refuses to mark); this forms a small spot of ink, out of which a line must be drawn with the pen turned the right way; unless a bad one, the pen will now mark. The finger nail is also a good substitute for a piece of lead for trying the pen on.

39. For putting ink lines in a chalk drawing, a stiff pen must never be used, for a stiff pen scrapes up portions of chalk which soon clog it up; this will sometimes be the case even with a soft one: when this happens, the pen must be wiped with a soft piece of glove leather, and fresh ink put in.

40. For straight lines, the common mathematical pen is the best instrument.



OF CHALK DRAWINGS.

The outline being now made, and the bridge fixed to the size of the stone, the drawing may be commenced with the lithographic chalk.

Where the subject requires skies of large extent, and where it is desirable to use the dabbing style, this operation must be done before any chalk be applied to the stone; but as this style requires many directions, they will be found in the chapter which treats of dabbing.

OF THE MODE OF HOLDING THE CHALK.

As lithographic chalk is more brittle than lead pencil, it requires some precautions in the mode of holding and cutting it, according to the intensity of the tint intended to be produced.

41. When delicate tints are wanted, the pencil must be cut long and slender, as in fig 4, plate 1; when middle tints, as in fig. 3, and when dark ones are to be produced, still more obtuse, as in fig. 5.

42. If, in drawing dark tints, the chalk is held sloping, as in fig. 8, it is sure to break; indeed, I know few pencils that would not: the darker the tint or the line, the more upright the chalk must be held, see fig. 6. When clouds and other light tints are to be produced, it matters little how sloping it is held, as in fig. 7.

43. When a series of lines are drawn on stone, in the same direction, for example, from left to right, if another series of lines are drawn over these in the inverse direction, that is, from right to left, the tint produced over each of these will be much darker, than if the lines had been gone over several times in the same direction. This effect points out to us an easy method of producing sharp and dark touches, where parts of a drawing require life and spirit; for if such touches be made dark, and those touches gone over again in the inverse direction, leaning hard at the same time, a very dark tint will be produced, which could have been obtained with difficulty otherwise.

44. If a delicate and dark line is wanted, it requires a sharp point, which will be sure to break if leaned upon hard; but, by not drawing it too dark at first, and bringing it to

its desired intensity, by working backwards and forwards, (43) a very sharp and dark line can be produced with ease.

45. As, particularly where fine and dark touches are wanted, the point wears out very soon, the best course to follow, is, every now and then, to rub the chalk on a piece of paper, from the point upwards, turning the stick in your fingers at the same time; by which means, with a little practice, the point is freshened in one rubbing. When, by repeating this six or eight times, the end is so blunt, that the producing the point by rubbing takes too much time, it must be freshened with a pen knife.

46. When lithographic chalk is cut, it must not be held with the point towards you, like a lead pencil, unless it be to begin shaping a new piece to a rough point; but when a sharp point is wanted, the end must be rested on the fore-finger of the left hand, and the point formed by cutting from the point upwards.

Persons not accustomed to draw on stone, are always desirous of having very hard chalk; a soft chalk is, however, by far the best to use; rich mellow tones are produced with much more ease with the latter, and are more certain to turn

out well in the printing: both chalks may, however, be used with advantage in the same drawing, the hard for the minute parts, and the soft for the fore grounds and dark touches; in heads and portraits the face may be done with hard chalk, and the back grounds and draperies with soft.

47. As every lithographic printer has a different recipe for making his chalk, and the mode of etching varies with each, it is important that, to ensure success, the drawings be made with chalk prepared by those who are to print them. This is the more important, as the proportion of black which is put in the chalk, must naturally vary with each maker; and it is evident, that the chalk containing a smaller proportion of black, will print darker than that which has more in its composition. Thus, a drawing made with chalks, obtained from different makers, although satisfactory to the eye, will be totally out of keeping when printed.*

* It is important to bear in mind, that lithographic chalk absorbs moisture, and if allowed in our climate to remain exposed to the air, soon gets so soft, as to be unfit for use; but, if kept in a bottle, with a cork or glass stopper, in a warm and dry place, it will remain good for years.

OF THE MODE OF APPLYING CHALK TO THE STONE.

48. In the infancy of Lithography, it was imagined, and asserted, that none but drawings, executed in a bold and free manner, could be successful; but with increased practice and experience, it has been found, that there is no necessity to produce the tint at once, and that a drawing will succeed equally well, and even better, if the tints are produced by going repeatedly over them, and stipling them up.

49. When a smooth and even tint, drawn on a stone with a rough point,* be compared in a microscope with one done with a fine point, the appearance of the first will be as in fig. 2, plate 2, and of the second, as in fig. 3. The extreme difference which exists in each, shews (as must indeed be the case) that the blunt chalk only touches the top of the asperities which constitute the grain, whereas, the finer point reaches those eminences A. A. A. fig. 2; and the half tint given to them by the chalk, shew that the rough point has

* From Engelmann's *Manuel du Lithographe*.

merely grazed their surface, instead of communicating the desired tint to them: hence, the tint produced by the fine point will be much richer and mellower to the eye, than that formed by a coarser pencil. I have given an example of this in figs. 11 and 12, plate 4; tint 11 is drawn with a coarse pencil, and tint 12 with a fine one.

50. This different appearance of tints, according to the nature of the points they are drawn with, is of great consequence, and more so still for portraits and figures, than for landscapes. For, as the former require a coarser grain than the latter, this very circumstance may be taken great advantage of, by giving what engravers call texture, to the various parts. Thus if the face and fleshy parts be worked with a fine pencil, and the draperies and other portions, according as it is wanted, are drawn with a coarser pencil, an openness and roughness will be given to the latter, and a silky and mellow appearance to the former, which will be very pleasing to the eye.

51. It happens, sometimes, that the draftsman finds it impossible to produce a dark tint, the chalk slips, as if it were greasy, and the tint, instead of being black, looks brown and shining. This may proceed from two causes, either the stone

is damp, or, by keeping the face too near to the drawing, the draftsman's breath has wetted it: in both cases the artist must stop, and, if the stone is damp, he must place it at a moderate distance from a fire to dry; if this effect proceeds from the breath, two or three minutes will be quite sufficient. Great care, however, must be taken never to heat or warm the stone much beyond the common temperature of the atmosphere, as it would infallibly ruin the drawing, and make it print all of one colour, without any keeping whatever.

52. In order to hinder the breath from thus moistening the stone, it is often requisite to hold a piece of paper before the nose and mouth. I say the nose, because, from the position of the nostrils, they generally throw more moisture on the stone, than the mouth does.

53. In order to produce delicate tints, the easiest way is to employ the stick and quill, (30) or the cork portcrayon, (31) and to hold it as indicated in fig. 1, plate 2, and not as one would hold a pen or a lead pencil. By this means, the evenness of the tint depends merely on the weight of the tool, and not on the firmness of the hand, as it does in the common way of holding the pencil; it is for this reason, that I have

recommended those tools not to be larger than four inches. This mode of holding the chalk, alludes, of course, only to the delicate tints; for all others, the chalk must be held as a pencil, or pen usually are.

54. In drawing skies, clouds, and other delicate tints, the touch, as much as possible, must be darker in the middle, than at both ends, as in fig 4, plate 2; this must be carefully attended to, for it is natural for the hand to make the touch darker at one extremity, than at the other, as in fig. 5. The importance of this observation will soon be seen, when it is considered that light tints (executed with chalk) are composed of a series of small masses of touches, and, as when one series of touches is finished, another series is continued next to the first, and so on, until a mass of tint is produced; unless these series of touches be properly blended together, each set will form a distinct mass, separated from its neighbour by a seam.

I will now exemplify what I have just said. It is evident, that if I produce two series of tints, close to one another, and composed of lines formed as in fig. 4, I shall have an effect, the advantage of which is clearly seen in the magnified

representation, fig. 7, in which the soft ends crossing one another form a seam, or joint, which cannot be perceived. The good effect of following this mode, is very striking in fig. 8. This tint is composed of two sets or series of lines, the seam of which is at the line B. B., and yet the most delicate eye cannot perceive the least unevenness at the point of junction. Not so with fig. 6, the tint of which is formed of lines similar to fig. 5, dark at one end, of which a magnified representation is given, fig. 14; it is impossible that a sky, or a distance, executed in such a way, can ever look well, and yet, I have not exaggerated the effect, and have often had drawings to print, the tints of which were drawn in this manner, and, curious to say, have received bitter complaints that the tints were spoiled in the printing, and the impressions rendered totally useless, from the carelessness of the workman.

It is, however, impossible, or nearly so, in delicate tints, to produce them perfectly smooth at once; at least to make them so, they would require being done too slowly, and with too much care. Much time will be gained, by making the first tint fainter than is intended, and with horizontal lines; when

a sufficient space is thus covered, the whole must be gone over with another series, forming an angle with the first, see figs. 9, and 10.

55. In figs. 9 and 11, I have left a space between each line, that the working and mode of producing the tint, might be more easily seen, and in figs. 10 and 12 the lines are brought close to one another, as they ought to be when a smooth and even tint is required. It is of consequence in producing these tints, that the lines should neither be apart from one another, as in figs. 9 and 11, nor yet overlap one another, but, that every line should come close to its neighbour, barely touching it; for in the first case, a white space is the consequence, and in the second, a dark line, from two touches laying over each another. I have given in fig. 18 a tint so produced, which will, I hope, induce those who see it to make every effort to steady the hand, and form tints that will print well. To a person who merely reads this article, it will appear that there are so many defects to avoid, and so many things to attend to, that it must be almost impossible to produce a smooth tint, but a very little practice will render the

thing easy, and by following the rules here given the hand will soon become obedient.

The second shading, given in figs. 9 and 10, correct any inequality which existed in the first tint, but in clouds and varied tints, it is necessary to make a third and more crossings, according to the shade required, as in figs. 11 and 12.

56. When the tint is thus formed, a great deal of trouble is saved by toning up the whole by rather a rapid and zig-zag motion of the hand, represented (much darker than it ought really to be) in fig. 13, crossing repeatedly in various directions, and leaning at the same very lightly (53), caressing, as it were, the drawing here and there with the chalk, wherever any faintness of the tint appears.

57. After this operation is done, any small inequality or speck, which may appear to the eye, must be remedied by stippling with a sharp pointed pencil here and there. These small variations in the smoothness of the tint, (although they shew in the printing) are often so slight as not to be perceptible when sitting close to the drawing, they are best perceived by standing up and keeping the eye at some distance,

these variations must be corrected by slightly touching those parts which seem too faint, holding the chalk as recommended at (53); for in this operation very often the least touch will smooth a place which appeared uneven, and a tint slightly darker would form a spot: fig. 19, represents a tint thus finished.

58. I have said (def. 55) that the lines which form the shading ought not to be separated from one another; this is true as far as concerns landscape; but for portraits and figures, a space left between the shading has often a very good effect, giving a decision and boldness to the draperies and the back ground, which add greatly to the beauty of the drawing. In this case, the working recommended (def. 56) must be omitted, but after the tint is as well smoothed as possible by various crossings, the stippling recommended (57) must be resorted to, to finish up, picking in this instance, as well as in skies and distances, any little black spot, however small, with the etching needle (32). In figs. 1 and 2, plate 5, are given series of tints thus produced, fig. 1 for dark tints, and fig. 2 for the lighter ones; in fig. 1, *a* is the first laying on, which of course ought always to be laid as smooth as possible,

b is *a*, with the second crossing, *c* has three crossings, and *d* is *c* stippled up and picked.

In fig. 2, *e* has two crossings, and *f* is the same tint as *e*, stippled and picked.

59. The lights of the clouds are generally left uncovered, but they often require a degree of sharpness on the edge, which it would be very troublesome to preserve. These, as well as light flying clouds, are better produced by scraping with the mezzotinto scraper (33 and 34).

60. It must, however, be well remembered, in so doing, that half tints cannot be produced by this means; as the parts so scraped, although to the eye producing the tint required, generally print as dark as they were before they were so produced; it is necessary, to ensure success, that the tool be very sharp, and that the hand feel (without, however, forming a hole or hollow) that the tool really attacks the face of the stone, and that the surface is actually scraped off, for, as I have just said, unless this be attended to, the part which is only half scraped, although looking lighter than the tint surrounding it, will print equally dark, and the artist will be surprised to find his sky without lights. Thus *only positive lights*

can be produced, see fig. 15, plate 2, by the mezzotinto scraper, or any other sharp tool.

61. Half tints must either be produced by scraping or scratching, with the point of the etching needle, small hatches, or lines very close to one another, as in fig. 16, plate 2, in which the half tint of the small cloud is so produced; a half tint may also be produced by working the etching needle, as recommended in (124).

62. By far the easiest mode, however, of producing these half tints, is with a mezzotinto grounder (34), the teeth of this tool acting like a small file, diminish the excessive labour of forming the half tint with one point only. The cloud, fig. 17, plate 2, is formed with this tool. The sole disadvantage of employing this aid is the regularity of the scratches: to avoid this, the scratches must be irregularly made, to break as much as possible the appearance of net work, which is the consequence of an unskilful application.

63. There is little difficulty attending the scraping out of clouds, and parts in the vicinity of delicate tints, but this help must be used with great judgment in the darker parts; for, as we have seen above, none but positive lights can be produced,

and if the parts so scraped, be rather large, they have, when printed on white paper, a snowy appearance, which is very disagreeable to the eye.

When, however, parts which are surrounded by a dark tint, and intended to be light, are made so by small lines or scratches (and not by scraping a broad light) an excellent effect may be produced which can only be detected by close inspection.

In fig. 3, plate 6, this mode of scraping is applied to produce the spirtings of the foam, and the partial lights on the foliage of the tree to the left; this help is used here so as to produce a good effect, and yet is not discovered unless by close inspection.

64. These observations are of equal importance in figure drawing, where scraping, properly applied, is of great use in the hair, bright lights on the nose and eyes, as well as for linen and drapery; in all these cases lights may, without any bad consequences, be scraped out much broader than in landscapes, and with great advantage.

65. It is of great consequence to recollect that when a part is thus scraped, it is impossible to draw again over that

part, as the grain has thereby been destroyed. The chalk does not hold on such parts, or if it does, produces dark and uneven blotches, which spoil the look of the drawing, an example of this bad effect is given at F, plate 11.

66. The stone being hardly ever as white in its colour as the paper which is used in printing, it generally happens with persons who are not in the habit of drawing on stone, that the impressions disappoint them, as these often have a meagre and poor effect which the drawing had not on the stone. This proceeds from the colour of the stone, serving as a sort of middle tint, which harmonizes the whole, and satisfies the eye.

It is necessary, consequently, in order to give richness to a drawing, in every instance to lay a ground work or smooth shading, more or less intense, according to the darkness of the tint; over this the shading, which constitutes the drawing, and various touches, which make out the parts, must be laid. Fig. 1, plate 3, represents a tint without this precaution having been taken, fig. 2 represents an equally dark tint, with a ground work previously laid under it, and fig. 3 gives this ground work as it was first laid under fig. 2. I have made a

separate figure of the ground work, to shew its comparative intensity, and the mode of handling it.

67. One of the most important points to be observed in dark shades, whenever they are wanted to print clear, is never to fill or clog up the grain.

The grain of a chalk stone is composed of hollows, and of eminences of which magnified sections are given in figs. 4 and 6, plate 3.

It is the grease contained in the eminences *b, b, b*, fig. 4, which, by receiving the printing ink, transmit to the paper the impressions wanted, whereas the hollows *a, a, a*, having absorbed no grease or chalk, while the drawing was making, will receive no ink in the printing (def. 1 and 2.)

If the artist leans hard with his chalk, the grain of the stone acting as a rasp, the whole of the surface will be clogged up, and covered with portions of the pencil, as in fig. 6, in which the eminences *b, b, b*, &c. are covered and loaded with chalk as well as the hollows *a, a, a*. Such a tint can never of course print bright, as the whole surface must receive the printing ink when impressions are taken: if, on the contrary, the chalk be not applied with much pressure, it will only be

deposited on the eminences *b, b, b*, fig. 4, and the hollows *a, a, a*, will receive none, consequently, when, after the completion of the drawing, the stone has received a preparation of such a nature as to repel grease, when applied to its surface, in every part where chalk has not been previously applied; it is clear that these hollows receiving no printing ink, and therefore transmitting none to the paper, small white specks shewing the paper, will appear in the impressions, surrounded by printing ink in various proportions, transferred from the eminences *b, b, b*. Now, as I have said above, it is this very appearance of small white specks which constitutes the brightness of a tint, and therefore if shadows are drawn, so as to appear greasy and clog up the grain, as in fig. 6, they must and will print as in fig. 7, and if drawn as recommended in fig. 4, the tint will be clear and bright, as in fig. 5; and it must be always borne in mind, that this clogging of the tint invariably shews more in the impressions than it does in the drawing (def. 74 and 78).

68. From all that has been said above, I conclude that, to print bright, a dark tint must be produced by repeatedly coming over the work, both by hatches and by

close shading (55, 57, 58), stippling occasionally to smooth uneven parts, until the whole is worked up to the intended degree of intensity, see tints, fig. 5, plate 3, tint 19, plate 2, and tints *d.* and *f.* figs. 1 and 2, plate 5.

69. I do not mean to say that in no instance the grain of the stone ought to be clogged up, whenever positive black is wanted, the stone may, without the least inconvenience, be completely charged with chalk, and great vigour and a most beautiful effect be thereby produced.

70. The difference that exists in the tints produced by various artists is inconceivable. This difference is equally striking, although the tints may be done precisely with the same chalk, and on similar grains, and even on the same stone. The beauty of a tint, in order to print well, consists in its having a rich, soft and velvety look, although firm and solid at the same time. It is done by not working the chalk too quick, but by producing the touch by a rather slow motion, as if painting with a brush; I cannot better describe it, than by saying that it is something similar to the motion of the hand of a person attempting with a soft pen to write slowly and gracefully a capital *J.* or *S.* when in the full part.

If the chalk be moved too fast, particularly in the full tones, the heat produced by the friction softens the chalk, and from that cause gives to the tints a roughness and coarseness which is sure to be transmitted to the impressions in an increased ratio. The most prominent eminences which form the grain will get loaded with a much greater quantity of chalk than the surrounding lower ones, and form a multitude of black sandy specks, which have a disagreeable effect on the eye, and destroy all the silkiness and richness of the tint. I may quote Mr. Ward's beautiful drawings on stone as perfect models to consult for the richness and fulness which he gives to all his tints.

71. I have often been asked to what degree of intensity a drawing ought to be carried, and, on the other hand, subjects have repeatedly been brought to me worked extremely weak, and when I have observed to the artist that the drawing was too faint, and would not please when printed, the answer was "that he could not get the chalk to work darker." In every instance I could prove the contrary on the margin of the plate; for on a well grained stone, every possible tint can be produced, from jet black to the most delicate shade. The

best rule to follow is to make the drawing as nearly as possible what it is intended to be, for (with me at least) the chalk ought to contain such a proportion of black and grease as to render the impression, as much as can be done, similar to the original drawing.

72. However, as the quantity of black contained in the chalk is limited, and not so in the printing ink, all the dark parts will print darker than in the subject on stone.

I should consequently recommend, generally speaking, to make all the light tones a little darker than they are wished to appear, the middle tints as dark as they are wanted, and when power and depth are required, boldly to charge the stone with as much chalk as it will take, observing the rules given (def. 68 and 69).

73. The rule given (72) with regard to the delicate tints, must not be followed to the same degree with regard to stones obtained from my establishment, in consequence of their receiving an artificial facing previously to their being sent out.

It is a common complaint with lithographic drawings that the light tints do not always hold, and that when they do, it is only partially, and are rotten. This complaint is still

greater with regard to dabbing which does not always answer the expectation of the artist; indeed this very useful mode of drawing skies has been almost completely abandoned from its frequent failure; by means, however, of this facing, the slightest tint of dabbing, or the most delicate touch of chalk, is sure to tell and to print to the satisfaction of the draftsman.

I have been led to this great improvement by the consideration that with some stones the light tints hold, and with others they fail, and that since success can be expected in some cases, it might be possible to imbibe the surface of the stone with some substance, giving to all an equal affinity for the chalk. The light tints then, with stones obtained from my establishment, must be drawn nearly as they are intended to be; with those obtained from other printers, as recommended (def. 72); and in all cases for middle and dark tints the directions given in the rest of the article are to be exactly followed.

I have had drawings sent to me, in which, in order to obtain depth and vigour, the whole stone was covered and loaded with chalk, so as to be almost black; this was done under a notion that depth could not be obtained in lithography

unless a drawing were so executed; the consequence was, complete disappointment. The same keeping, the same richness and depth of effect in the dark parts, and the same delicacy in the lighter ones, must be, throughout the whole subject, attended to as they are in drawings on paper.

74. If two equally dark lines, *b, b*, made with lithographic chalk, cross each other, as in fig. 10, plate 3, it is clear that the point of intersection, *a*, will contain double the quantity of grease, and consequently will take double the quantity of ink in printing; thus from what I have said (def. 72), the point *a*, will be darker in the impressions with regard to the lines *b, b*, than it was in the drawing.

This phenomenon is the cause and explanation of the most common disappointment which persons meet with in attempting lithography, viz, coarseness and unevenness in the tints of the impressions. This disappointment is not only painful to the artist, but also the source of infinite trouble to the printer, who has to take and pick out all the spots occasioned by the want of attention to this point on the part of the artist.

75. It is from this circumstance that many parts of shading which appear sufficiently smooth to the eye when

carelessly executed and superficially examined, turn out rough and spotty when printed; that windows, arches, &c. and small parts where touches cross (74), and meet in the shading, print blotchy and foul, see figs. 3, 5, and 9, plate 4. In sketchy subjects, what I have said above is not of much importance, but in carefully finished drawings, and in minute parts, it is of the highest consequence.

76. Therefore when a part is considered as finished, it must be examined with care, and if small darkish specks of chalk, or crossings of touches appear, they must be carefully picked out (def. 123), and the painted parts stippled in, until the whole appear clean, smooth, and having a proper grain of the stone intervening.

77. As the above observations are of great importance, I may perhaps be excused for extending on the subject, and presenting it under another aspect, in order to impress it still more strongly on the minds of the reader.

78. Let us divide the different tints produced by printing ink, from the most delicate to the darkest and most intense, into fifteen parts or shades; if on a grained stone we attempt to produce with chalk the darkest tint we can obtain, this tint

compared with the fifteen shades of the printing ink, will correspond with tint 10 of the latter, and the scale for the various tints of chalk, begin from 10 upwards of the printing ink scale; and this is easily understood since the proportion of black contained in the chalk is limited. Now by experience we find that the most delicate tint produced by the chalk (from the necessary operation of etching with an acid and other causes) does not print quite so dark as it is drawn, and as on the other hand, in the darkest tint that can be produced by chalk, the stone, in that place must be completely saturated with grease, it follows clearly that in that spot, it will and must take as much printing ink as it can possibly receive, and consequently that, although the darkest tint produced by the chalk on the stone equals tint 10 of the printing ink before printing, it will equal tint 15 of the latter when printed.

Thus we can construct the following scale fig. 11, plate 3, from I. to X. chalk, equals from 1 to 15 printing ink, putting roman figures to represent the chalk tints, and the common numerical figures to represent the ink tints.

Tint 1, as we have seen above, being fainter in the impressions than it is drawn, will be placed a little higher up

than I.; 2 prints nearly equal to its opposite number II.; 3 more so still than 2; 4 the same; 5 the same; 6 and 7 will be the limits of VI.; 8 and 9 of VII.; 10 and 11 of VIII.; 12, 13, and 14 of IX., and finally 15 as X. Thus beginning at the faint end of the scale, and going downwards, the tints print fainter than drawn, and gradually get more similar to the chalk tints as they approach the middle tints; and beginning at the dark end print much darker than drawn, and gradually get more similar to one another, as they also approach the middle tints. Let us now refer again to fig. 10, comparing it at the same time with fig. 11, as I have already observed on the subject (74), if the two lines *b, b*, contain chalk as V., since at their intersection, *a*, they contain chalk, as X., that point *a*, will not print as 10, but as 15; that is to say, with the greatest intensity of the printing ink, and, consequently, if that point were not intended as part of the drawing, but were a mere accidental crossing of touches or spot, it must evidently be much more apparent in the printing, than it was in the drawing.

I would not, however, have it thought that the above numbers are given as an exact scale of the effect of the chalk

in the printing, for were it so, it would be totally impossible to obtain a good impression. That the dark tints print darker than drawn is undoubted, but I have exaggerated the effect, when represented in numbers, in order to render the case more striking and impressive, and shew how important it is, particularly in highly finished drawings, to make the tints smooth and even, and to remove, by picking, all dark spots and inequality, if the artist wishes to be pleased with his impressions; since it is clear, from what has been said, that an inequality in the tint, which but slightly strikes the eye in the drawing, will become a most offensive defect in the printing.

79. In figs. 3, 5, 7, and 9, are given examples of the bad effect of allowing the spots occasioned by the crossing of touches to accumulate and remain, and in figs. 4, 6, and 10, I have shewn that it is possible, with care, and by following the directions already given, to avoid this very great defect.

80. With regard to fig. 7, I must observe, that from the waxy* nature of lithographic chalk, it is apt in drawing

* The waxy nature of the chalk makes it necessary to shade the parts first, and lay the detail over afterwards. For if the reverse is done, the shading drags away a great part of the chalk, which constitutes the outline and shape, and destroys all sharpness.

tints to accumulate in little knobs, which, when once formed, go on increasing in intensity every time the chalk is passed over that part; in the lower part of fig. 7, at the line *a, a*, I have allowed this defect to remain and accumulate, the upper part above the line *a, a*, having this defect remedied. This is easily done with a little dexterity, by avoiding to pass with the chalk over these parts, and by working round them, the rest of the tint is often toned to the same degree of intensity as the spots themselves, and if they still remain apparent, a touch here and there with the etching needle will soon and easily remove them.

81. It is next to impossible in drawing small objects to avoid producing such specks; they existed in a slight degree in figs. 4, 6, 10, and 7, when I drew them; but a little picking immediately caused them to disappear, and rendered the tints quite smooth and even. In figs. 3, 5, 9, and 7, I have not exaggerated these defects in the least, and continually receive drawings in which such parts are drawn in a similar manner, and are expected by the respective artists to turn out well in the printing. I conclude, therefore, by this general rule, which cannot be too much attended to—that to be

successful in the printing, the tints cannot be drawn too smooth and too carefully; and that when spots do appear in the drawing they must be carefully and immediately picked out; and, in short, that the artist while he is drawing on stone should always bear in mind that he is not drawing on paper, but on a substance which is intended to transmit a series of impressions, the bad tints as well as the good ones; and, therefore, after having read attentively what I have said above, he should always say to himself, "Is what I have just done, drawn so as to print well?" Examine the work, and repair immediately those parts which appear defective. In fig. 1, plate 6, I have given an example of a subject of natural history, drawn without aiming at its printing well; and, on the other hand, in fig. 2, I have drawn the same subject with care, and according to the rules already laid down. In fig. 1, the tints are drawn with a coarse point (67), the spots and unevenness of the tint allowed to go on accumulating (80); the outline is not definite, or the shading carried up to it; the ink has been used too freely, and improperly applied (115): on the other hand, in fig. 2, the tints have been originally laid smooth and with care; no black knobs have been allowed to

accumulate; the black specks, whenever they were too conspicuous, have been carefully picked out; the outline, without being harsh or wiry, is made out and definite; and, finally, ink has been used in certain parts to give sharpness, without nevertheless being seen, or rendering the drawing heavy.

82. It is of the greatest importance to recollect, that in no case water must be applied to any part of a chalk drawing. The chalk being a soapy compound, is immediately dissolved, and fills all the hollows of the grain, and the consequence of such a misfortune is a black spot where the solution has been produced. If such a disaster happens to a large extent, there is no remedy, the drawing is spoiled; but if only a spot of water has fallen, it must be carefully absorbed by blotting paper, without leaning at all on the drawing, the part when dry examined with a magnifying glass, and the grain restored by picking carefully with an etching needle.

: In order to render the rules for making a chalk drawing upon stone more clear and concise, I will sum up all what has been said in the preceding pages. The light tints must be smooth and even, all little black or darker specks picked out, and the fainter ones stippled up, so as to render every

part uniform; the whole drawing must be made a little sharper than it is intended to print; no small spaces must be left uncovered with chalk, but the tints worked up with care to that part which is intended to be the outline. In landscape, the mountains and buildings must be well defined and made out, and no blur of chalk allowed to project beyond the intended shape; but when that happens, these blurs must be carefully picked out, in order that all these parts may be clear and distinct; in the angles let no chalk accumulate, but pick out all black spots. In heads, let all the tints be brought up to the outline, and every part well told and decided; let not the stone appear between the shading, which will make such parts appear rotten; the light tints must be laid on clean, and with great care; all projecting blurs and spots of chalk, which hinder the shape from being clear and distinct, to be picked out. Both in landscape and in figures, let all the dark tints be rich and powerful, but even at the same time: the grain of the stone in those parts not intended to be positive black, must be seen in the shape of little white specks; no black specks produced by crossing of touches must be allowed to remain, and the entire drawing must look delicate in the

light tints, firm in the middle ones, and rich and powerful in the darker parts, with great clearness, at the same time, throughout the whole.

I have endeavoured in plates 12 and 15, as much as laid in my power, to give applications of the above rules. A difference will be perceived in the degree of fineness of the tints of the face, and in those of the cap and mantle; the former being done with a finer point than the latter, giving texture to the tints (50).

The back ground in plate 12, is formed with hatches, and not with close work (59). After various crossings, the tint was smoothed and stippled, and all dark spots picked out with care (56, 57). The small dark touches, such as the minute shading of the eyes and nostril; the hair and the mustachios were drawn with a sharp point worked backwards and forwards (44).

The lights in the fringe are scraped, (64); half tints will also be perceived in that part, and on close inspection it will be seen, that they are produced by small hair lines scraped close to one another (63), and not by broad scraping, which produces the positive lights. The tints in the cap and cloak

are dark, although clear at the same time (67, 68), and are produced by laying first a ground work (66), and then coming over repeatedly, without leaning too hard, until the full power of the chalk be obtained (71). The stone having been faced (73), the light tints were hardly drawn darker than I intended they should print; but had I drawn on a stone not faced, I should have made them all a shade darker (72).

In short, in the touches of the armour and the cap, I carefully picked out all the blurs which occasionally formed on the edges, and which would have destroyed all sharpness, and given indecision to the parts (126).

In plate 15, the sky is drawn according to def. 54; the lights of the clouds scraped out as recommended def. 59; the middle tints drawn clean and smooth; the lights of the water on the wheel produced according to the rules laid down def. 63; the windows and small parts are drawn sharp and firm, but no knobs of chalk allowed to accumulate, def. 80, 81; the dark parts of the fore ground, and of the old tree to the right, were prepared with a rich and dark ground, def. 66, but produced according to def. 67; the full power of the chalk was given to this part, and when completed, ink was added in

various portions of the trunk of the tree, of the weeds and rocks in the fore ground, as well as of the rocks which are still farther off, the water wheel, and the rustic bridge to the left of it, in order to give sharpness to the whole, yet still so applied as not to produce thick or heavy lines (115).

In plate 13, the same rules have been observed, with the difference that, from the darkness of the intended effect, the pen and ink has been used with much more freedom, to give sharpness to the parts in the shadow.

OF THE DABBING STYLE.

One of the most important improvements made in Lithography is the dabbing style, invented by Mr. Engelmann of Paris. By means of this process, skies and delicate tints may be produced in half an hour, which it would take a week to equal with chalk.

OF THE IMPLEMENTS.

83. The tools and implements requisite for this style, are—

A small slab of stone, marble, or glass.

A muller to spread the dabbing stuff with.

A pallet knife to take up and clean off the dabbing stuff when old or dirty.

Some stopping liquid.

Hair pencils of two or three sizes.

Dabbing stuff.

A brush to spread the stuff on the dabbers, fig. 4, plate 7.

Two dabbers, figs. 2 and 3

A considerable improvement has been made in the dabbers by Mr. G. Harding, which greatly facilitates the production of smooth tints.

Dabbers are usually made with a short handle, fig. 3; but by fixing a long handle at right angle with the dabber, as the handle of a hammer is fastened, the production of smooth tints in dabbing is rendered much easier, see figs. 1 and 2, plate 7.

The simplest mode of fastening these handles is this—through the center of the dabber a small wooden screw is fixed, which is seen projecting, fig. 1, at the top of the nut *c. c.*; the handle *b.* has a flat knob, *a. a.* at its extremity, through which the screw passes, and the nut *c. c.* by screwing down on *a. a.* fixes the whole firmly, and enables the dabber to be changed with ease and expedition. This figure is drawn of the full size of a dabber. Fig. 2, gives an entire but diminished representation of the dabber, and the relative proportion of the handle with regard to the dabber.

Those dabbers must be stuffed with great care with clean and soft cotton, laid perfectly smooth at the upper surface, and covered with white kid leather, tied on tight. Fig. 1, represents a dabber of the best size and convexity for common use; the handle may be about fourteen inches long. To try whether a dabber is well and evenly padded, it must be carefully and smoothly charged with dabbing stuff, and a smart blow struck with it on a clean piece of stone, or a sheet of paper, when any inequality or defect will shew immediately.

As the dabbing stuff accumulates on the dabbers by use, and is apt, when in too great quantities, to form knobs, it is necessary every now and then to wash the face of the dabbers clean with some turpentine; this must be done however some time before the dabbers are again used, to allow the turpentine to evaporate, as it might otherwise injure the tints.

OF DRAWING IN THE DABBING STYLE.

84. The first step to be taken is to lay a margin of stopping liquid,* about half an inch wide, all round the drawing: this is done in order to hinder the dabbing from touching the stone beyond what constitutes the drawing. Half an inch is quite sufficient; what may soil the stone beyond this coating of stopping liquid, is of little consequence, as it is easily removed afterwards with pumice stone, and the face of the stone, which is left uncovered on the sides, is convenient for trying the dabber on.

85. The margin once formed, the next step is to lay on a coating of stopping liquid wherever positive lights are intended. I must observe, however, that this stopping liquid must not be laid on too thick, for two reasons; the first is,

* The stopping liquid is composed of gum water, not quite so thick as cream, with the addition of a little gall and a very small portion of candied sugar in powder. The object of the gall is to hinder the gum water from flying back from the tints already formed, which it would otherwise do; just enough must be added to obviate that effect, and no more. Very little sugar must be added; if the stopping contains too much, it remains sticky, and the dabber is apt to pull it up, which would infallibly spoil the drawing.

that when thick, it takes too long a time in drying; the second, that if the coating is thick, the edge of it hinders the dabber from reaching the part intended, and the outlines of the tints are undecided, instead of being sharp. The stopping, on the other hand, must not be too thin or washy; for in that case the dabber would be liable to dab through the coating, and form black spots.

86. Another important point to attend to is, that the dabbing must never be proceeded with unless the stopping be perfectly dry. This renders the operation rather tedious, but is easily remedied by dabbing two stones at one sitting: by this means the stopping of one subject is drying, while the dabbing of the other is proceeding with.

87. I have said, 85, that before any dabbing is applied, a coating of stopping must be laid on all those parts intended to form the positive lights; this coating being thoroughly dry, the dabbing may be applied. A portion of the dabbing stuff, about half as big as a hazel nut, must be put on the small slab, and well spread and ground with the muller. In winter the operation is facilitated by warming the slab by the fire. The brush, fig. 4, plate 7, must be well scrubbed over the slab, by

which it will get charged with dabbing stuff;* and the brush, thus charged, must be rubbed over the face of both dabbers, figs. 2 and 3, until they appear well charged with the stuff.

88. The two dabbers must now be worked together, as printer's balls are done, in order to spread the greasy mixture equally over the faces of the dabbers.

89. When the face of the dabber, fig. 2, is well and evenly charged, it must be examined, and if any little knob of dirt or dabbing stuff is seen, it must be carefully picked out with the point of a knife; as every one of these knobs will produce as many black spots as blows are struck with the dabber: see fig. 1, plate 8, where these spots are purposely formed, and marked with the letters *a. a. a.* The whole time the artist is dabbing, he must examine the tint as it is forming, to see if none of these spots are produced, for particles of dust on the stone will stick to the dabber, and occasion them; it is consequently a useful precaution to brush the face of the stone every now and then, as the dabbing is proceeding with
(19.) Immediately after having worked the two dabbers

* I owe the communication of this excellent mode of loading the dabber to Mr. Baynes, Sen.

together, the dabber, fig. 2, plate 7, would give too powerful a tint for the first tints of a sky : if there is room on the margin, a blow or two must be struck there first; if not, very gentle blows must be struck on some part of the drawing intended to be dark, and when it is perceived that the tint given by the dabber is faint and delicate, the sky may be commenced.

90. The effect produced by a dabber too much and unevenly charged, is ruinous to a sky; it forms a number of sandy black specks and streaks, which it is almost impossible to remove; in fig. 1, plate 8, at the lowest corner, are some of these spots, marked with the letters *d. d.* The dabbing of the sky, once commenced, must be carried on with great caution; the artist must not attempt to proceed too rapidly, for no smooth and even tint can ever be obtained in that manner; but the dabber must be continually kept playing about in various directions over the surface of the drawing, and never continued in one particular part, or worked according to a strait line; for if this is done, that part will be darker than the rest with a seam, which it will be almost impossible to destroy. I have produced this effect in the upper part of fig. 1, plate 8,

in which I have continued striking the dabber in the corner, *b. b. b.*, and the tint obtained is thereby darker than the next. When, after having struck ten or a dozen blows, the dabber does not appear to give any more, its face must be freshened on the other dabber (88), and the same precautions used as recommended at 90; thus the tint must be gradually worked up to the desired intensity, changing the dabber whenever it ceases to give a tint, continually playing over the surface of the stone without ever striking twice in the same place, and graduating the tint according to the effect that is wanted, as in fig. 2, plate 8; always bearing in mind, that an even and delicate tint can never be obtained but by proceeding slowly, and that if the person produces the tint instantly, it will always have an uneven and blotchy surface; for, however carefully the dabber might be worked, were it to go but once over every part of the stone, the tint would be a series of pale grey circles, of various degrees of intensity, according to the giving power of the dabber at the moment the blow was struck; consequently an even tint can only be obtained by coming repeatedly over every part of the drawing,

by this means every small defect is remedied, by the next delicate tint, and the whole of these various faint circles so blended together as to form one even and uniform surface.

91. The dabber must always be held perfectly strait in the hand; if this is not attended to, the drawing runs the risk of being spoiled; for if the edge is allowed to strike the stone instead of the middle of the dabber, the effect given in fig. 1, plate 8, *c. c. c.* is the consequence.

92. Although when first charged (88), the dabber must be struck very gently, as it gradually ceases to give, the blow may be increased; in that state a smart blow, if perpendicular, may be given without any danger.

93. Those parts which are intended to remain of the degree of intensity just formed, must now be covered with stopping liquid (85, 86), and another tint laid on with the dabber; the next tints again stopped out, another tint of dabbing applied, and so on until the whole drawing be wrought up to the required intensity. Plate 10 and plate 9, fig. 1, are executed in this manner.

94. I would, however, never recommend the dabbing to

be laid on darker than the middle tints, and merely to consider it as a very convenient method for executing skies, and other light tints, as well as for laying in a broad, but faint effect of the subject; it acts as a ground work to all the tints which are to be laid on afterwards with chalk, and serves to give richness to the drawing. Dabbing, when wrought too dark, hinders, from its greasy nature, any subsequent application of chalk, and is apt to print smutty.

95. Dabbing, properly applied, is very convenient for producing the flat tints in shading of machinery, and for the flat tints in sections of architectural and geological subjects; see plate 10.

96. In case a dark tint were wanted in dabbing, the short handled dabber must then be used for producing the tint, instead of the long one, and, instead of striking a sharp blow, the dabber must be pressed on the stone with a gentle motion, allowing it to stick as it were when pulled up, which will give a much darker tint.

I would not advise it however to be used to any extent in portraits or heads, in which subjects it never harmonizes or looks well.

97. As the principal ingredient of the stopping liquid is gum, the sooner it is got rid of, the better : for if left too long on the stone, the artist will find, to his dismay, that the touches of chalk which have been laid on those parts, to which the stopping has been previously applied, do not hold, producing thereby large and faint patches. It is for this very important reason, that I would recommend a draftsman never to commence dabbing a drawing, unless he can do it at one sitting; and on no account to allow the stopping liquid to remain on several hours, or, what is still worse, until the next day.

98. Therefore the instant the dabbing is completed, some clean water must be poured on the stone, until the stopping begins to soak off; and wherever it still appears to stick, it must be gently removed with a large and soft hair pencil. This must be done with care, for as the stopping has often a great deal of dabbing stuff on its surface, the brush, if leant hard, might rub some of the latter on the face of the stone, as well as form white streaks in the flat tints, by scratching the fresh dabbing which is to constitute the drawing. The stopping being now all removed, and washed off, the stone

must be put to soak in a trough, and some clean water, for about ten minutes, and no longer; another quantity of clean water thrown over on taking it out, and the stone allowed to drain and dry.

If, when the stopping is first removed, (98), the dabbing appears defective, or too faint in some parts, the stone (before the soaking is resorted to) may be dried, stopping applied afresh, and the faint part dabbed anew; the operation of washing and soaking must then be followed as recommended above.

99. I have mentioned (97) the danger of allowing the stopping to remain too long on a drawing, and I have given an example of this in fig. 1, plate 9, in which case I left the stopping liquid on, until the next day; the consequence has been a complete failure. The whole drawing was drawn dark and rich, and is become in the printing faint and meagre. The dark foliage in the upper part of the tree on the left, has white streaks in it, owing to its being drawn over the part where the stopping had been previously applied, to form the white clouds; the hill and distant trees were shaded with chalk, and the forms made out, the whole of which has disap-

peared; the house on the right, had stones and other details put in, nothing but the original dabbing has remained; in short, the bridge and the fore ground were drawn dark and rich, and from the quantity of chalk applied, a portion has remained, but by far the greatest part is gone.

100. The danger of such a failure induces me to recommend to the artist, whenever he can help it, not to use the stopping liquid, but to content himself with dabbing in the sky; and for the other parts, where a sharp light is required, to cut out the original tracing (23), and apply it, thus cut out, to those parts of the stone which the dabber is not intended to touch; a general tint of dabbing may also be applied to all the rest of the stone; and, when the drawing is completed, a few bright lights scraped out here and there where wanted (60, 62, and 63). The cloud *c. c.*, fig. 2, plate 8, is thus produced; and for landscapes, this plan will be found by far the safest, and sufficient for almost every purpose.

In thus cutting out the paper, it must be recollected that the thickness of it hinders the dabber from reaching exactly the outline intended, and that in consequence the hole in the paper, through which the dabber is intended to act, must

always be cut about an eighth of an inch larger than the subject intended.

101. Although I recommend the stopping not to be used except in drawings of machinery, or some architectural subjects (95), it may be, without danger, applied as a margin before the dabbing is commenced (84); but even this may be dispensed with, for it is of very little consequence whether the dabbing projects beyond what constitutes the drawing, as a little scraping easily removes it. This is the plan I always follow for my own drawings.

If stopping has been used, the chalk must not be applied before the stone be thoroughly dry, after the soaking, 98; but if no stopping has been used, the chalk may be worked on the subject immediately.

102. An ink outline may however be made before the dabbing is applied, and even if the stone is to be soaked, without any danger; this mode of proceeding will be found very convenient for drawings of machinery, architecture, &c. Plate 10 was executed according to this method.

OF THE UNION OF CHALK AND DABBING.

The union of chalk to dabbing requires some precautions in many instances.

103. The tint produced by the dabbing being extremely delicate, if the chalk be coarsely laid on in the light tints, although it may not shew so much in the drawing, (78, 81), it will form such a contrast with the delicate tints of the dabbing, in the impressions, that the artist often wishes, on seeing a proof, that he had never applied any chalk in those parts.

104. It is however easy, with care, to avoid this defect, which occurs chiefly in clouds and in distances, for by using a very long sharp point, and drawing the tint close and delicate (41, 49, and 50), the dabbing may be imitated by the chalk, so as to harmonize completely with it.

In fig. 2, plate 9, the clouds *b, b*, are drawn with care, and the clouds *a, a*, in a coarse and careless manner.

105. With regard to the darker tints, it is useless to make any observations, as this contrast does not exist in the same degree, and the darker tones of dabbing are almost

invariably so covered with chalk, as not to be seen in its original state; but for skies, distances, water, light parts of buildings, &c. def. 103 and 104 must be strictly attended to.

OF THE PEN & INK STYLE.

106. The best instrument to use in this style is the pen (35); the directions given (38) for the mode of working with the steel pen are to be followed.

107. For ink drawings the stone must always be polished.

108. The tracings done as directed (def. 24).

109 The ink must be worked with soft water, as one would a stick of indian ink, and rubbed until the solution acquires the consistency of cream.

110. This is a material point to attend to, as, if too thick, it will not flow from the pen, and if too thin, fine lines cannot be produced, the ink will run on the stone, and the lines being poorly fed with ink, will not stand the etching, and will look

broken in the painting. Ink mixed up with water must not be kept, so mixed, longer than three days, as after that period it gets clammy, and does not flow freely from the pen.

111. To be successful, every part of an ink drawing must look black, and well fed with ink; if it has not that appearance, it cannot print well.

112. Whatever effect is intended in an ink drawing, it must be done by thicker or thinner lines, crossed in various directions, as in a copper-plate etching, the ink being always used equally thick. Some persons think, that by using the ink thinner for the distance, and thicker in the parts nearer the eye, they will obtain a better effect. It is so certainly for the eye, so long as the drawing is left on the stone; but, when printed, either those lines which were poorly fed (110), will break up, and not print at all, or else they will print as black as those which were drawn with thick ink, so as to spoil completely the effect of the drawing (see fig. 3, plate 5, in which only a few traces of the mountains remain, and all the lines of the distance having been drawn with weak ink, are broken and partly gone). It is evident, therefore, that in making a pen and ink drawing, the tints of the ink must never

be altered, but all the lines kept as black as possible, and a varied effect produced merely by the fineness or the thickness of the lines.

113. It often happens, during the execution of an ink drawing, that two lines run together; this is easily remedied, by waiting till the lines are dry, when they may be separated and opened with an etching needle; indeed, when an ink drawing is completed, it is necessary to examine it with care, and open with a needle all those parts which are not sufficiently clear and distinct.

This style is admirably calculated for maps, machinery, plans, wrappers of books, writings,* &c.; but it is useless to attempt the representation of landscapes beyond the imitation of pen and ink sketches, as very fine lines, such as are necessary for skies and distances, cannot be produced.

114. Some persons have also attempted drawing with ink on a stone, as they would with washes of indian ink; a drawing so executed is sure to fail, for, first of all, from the

* See the title page of this work, as an example of writing executed in this style.

absorption of the stone, it is impossible to lay on a flat tint, every touch sinking in as it would on blotting paper; and secondly, as it is not the black contained in the ink which transmits the impressions, but the grease, two things must happen—either in the light parts there will not be grease enough to resist the etching, and those parts will not print at all; or else, if they stand, they will print completely black; see fig. 4, plate 5, in which only a few traces of the sky are perceivable, the tints of the mountains are either broken or too black, and the whole appearance that of a drawing completely spoiled.

The brush is not near so good a tool to employ for ink drawings as the pen, from its requiring so repeated and continual a supply of ink.

OF THE MIXTURE OF INK AND CHALK.

115. Lithographic chalk is applied in a dry state to the stone, and consequently in this style the touches remain as they are laid on. This is not the case with ink, when laid on a grained stone, for, as the ink is liquid, a small portion

of this liquid, (which is a soapy solution), is absorbed by the stone on each side of the line; and although to the eye this line appears fine, (the black deposited by the pen being the only visible part), it will, when printed, be much thicker than when first drawn, as the portion of stone which has absorbed the soapy solution will take the ink, as well as the black line originally formed by the pen or the brush. What I have said, may serve as a sufficient caution never to attempt giving an ink outline, or ink touches, to any faint part of a drawing; for it will invariably spoil the subject, as illustrated in fig. 1, plate 4. In middle tints, however, the pen may be used with advantage to give sharpness, but still the intended effect must be produced by a series of thin and delicate lines, and not by thick touches; in the dark parts of a drawing, bold touches of ink may be used to great advantage, see fig. 2, plate 4

116. With proper care, very fine ink outlines may be produced, on a grained stone, with a small sable (36); this tool may be used with great advantage, even so as not to interfere with the delicate tints of the chalk, or spoil their appearance. This mode of producing fine lines, is very useful

for giving sharpness to architectural subjects, &c. In general, finishing touches with the pen will be found of immense use in giving sharpness to figures, cattle, and small objects, in the fore ground.

OF TRANSFERS.

117. One of the most useful applications of Lithography, is the possibility of writing with lithographic ink on a prepared paper, and throwing or transferring the writing on a stone, and printing from a transfer so made. The paper, however, on which it is necessary to write, is not near so pleasant as common paper, as the preparation is continually taken up by the nib of the pen, and clogs it up: this obliges the writer to wipe his pen at almost every word, and causes it to write thick, after a few lines have been traced: therefore, as writing on this paper requires care and practice, it is preferable to transcribe with common ink on paper, the circular or writing wanted, and to get a fac simile made and printed at a lithographic printing office.

If, however, it is desirable to make the transfer one's self,

it is requisite the directions given, 109, 110, 111, be strictly attended to; it being recollected, that the ink used for writing transfers, is not the same as that used for drawing on stone; this latter is of a much stiffer quality.

See plate 18 for a specimen of transfer, and of fac similes.

OF WRAPPERS FOR BOOKS.

118. Very beautiful wrappers for books, and ornaments of various descriptions, may be drawn by tracing with gum water those parts intended to be white, and covering the whole stone afterwards with a greasy ink; which of course cannot touch the stone wherever the gum has been previously applied. Previously to applying the gum, the detail and interior parts of the ornament ought to be made out with lithographic ink, and the gum then laid over in all those parts which are to be white. This is all the artist has to do, the rest being the business of the printer. It is of course necessary to form a margin with gum water all round the subject. The wrapper of this work is given as a specimen of this manner.

OF TRANSFERRING COPPER PLATE IMPRESSIONS TO THE STONE.

119. This discovery bids fair to become one of the most useful applications of lithography, as it may be applied with immense advantage for book plates, labels of every description, bill heads, banker's checks, &c. &c. where long numbers are wanted, for, with one copper-plate alone, millions of impressions can be obtained. By throwing off several impressions on one stone, a considerable saving can be obtained in the printing, plate 16* and 17, are examples also of this process.

* This impression was thrown off on stone by permission of Mr. Ibbetson, from an engraving executed by machinery on copper plates. Original impressions from the same copper plate may be seen in his publication, entitled "A Practical View of an Invention for better protecting Bank Notes against Forgery", a copy of which is in the library of the Society of Arts, and thus a comparison between this lithographic impression, and an original impression from the copper plate itself, is available to all. I must beg leave to observe here, that the specimens given, are from copper plates, from which many impressions had already been taken, which are, consequently, partly worn out.

OF PRINTING WITH TWO PLATES.

120. The German artists, principally, make great use of various tints, which are added, to the original black and white impression. This mode of printing has been rarely adopted in this country; but when employed with judgment, is capable of producing very beautiful effects. The first plate, is a chalk drawing done in the common manner; when finished, an impression of this drawing is thrown on a polished stone, and a transparent coating of a waxy substance laid over the impression thus transferred. In this state it is sent to the artist, who must scrape away this waxy coating wherever he wishes white lights to appear. To produce a good effect, in this way, requires some judgment; the lights must never be scraped out too broad, for the impressions will have a snowy appearance, which will be very disagreeable; the effect must be rather produced by small scratches close to one another, it being well borne in mind, that half tints of white cannot be scraped out. Every line scraped will be positive light; but the effect of half tints must be produced by the fineness of

the lines, and not by the more or less scraping of the waxy coating.

In scraping, the artist must feel that he has actually removed the waxy coating, and that the tool has touched the face of the stone, if not, the intended light will not tell, and the scraping become useless. For imitating the rough touches of white chalk, it is a very good plan to jag (by striking with a knife) the edge of the tool used in scraping. With such a tool, a ruggedness will be given to the scraping, which could not be easily imitated in any other manner; but unless they are scraped with art, these lights will have a heavy and mechanical look in the printing.

121. There is another method of executing the tint plates, which some persons prefer, it is as follows: after the printer has thrown off an impression of the drawing on a polished stone, instead of laying on a waxy mixture, the stone is sent to the artist, who lays on gum water (as in def. 118) over all those parts which are intended to be white; a margin of gum must also be added, and the rest is done by the printer. I have given, as an example, the tint plate alone, plate 14, and the tint plate added to the first drawing, plate 13.

OF CORRECTIONS.

Corrections, I am sorry to say, in the chalk style cannot be made to any great extent, and in dabbing are impossible.

122. If in a chalk drawing it is desirable to take out any part, a small piece of lithographic stone, as large as a shilling, or a half crown (according to the size of the part to be effaced) must be used as a muller, with some very fine dry sifted sand, and the part rubbed dry, until the sand be reduced to a fine white powder, (pumice stone must never be used for this operation, as it polishes the stone). When the grain is brought to a proper degree of fineness by so rubbing, the dust must be well brushed off, and wiped, and the drawing proceeded with over that part. Water must on no account be used in this operation, as it would dissolve a portion of the chalk of the remaining part of the drawing, and produce a black seam in the printing, which nothing would remove.

123. If only a small portion of the drawing is wanted to be removed, this must be done with a sharp etching needle, digging, as it were, close dots in the surface of the stone, so

as to imitate the grain. It is very necessary, however, not to go too deep into the surface of the stone, for holes would be formed, which in printing would fill mechanically with ink; on the other hand, if the picking be done too slightly, the chalk not being sufficiently removed from the stone, will re-appear in the printing; it is necessary to feel that the needle actually bites the surface of the stone, without, nevertheless, actually forming a hole. The needle must have a very fine point for such an operation, otherwise it would form in picking large white specks, which could never be repaired.

In fig. 8, plate 3, in the tint *d*, I have picked out a small portion from *b* to *b*, the tint *d* having been originally drawn square over the ground tint *A*. I have, also, beginning from the cross section *a*, *a*, picked a portion of the line *c*, *c*, which was continued downwards beyond the line *a*, *a*.

124. There is also another mode of correcting, which is, instead of picking dots, to guide the needle with a sort of net work motion, similar to the lines given in fig. 9; these lines are magnified in this figure, to shew them more clearly. In moving the needle with a similar motion, on a much smaller scale, over a tint, the grain of the stone is very well imitated,

and a tint lightened or removed. During this operation, as well as during picking, the stone must every now and then be brushed, to remove the dust formed by the needle, and see whether the operation has been properly, and sufficiently, performed.

125. If an error has been made in a chalk drawing, the above are the only helps I can give. Some persons, when they have made a fault, scrape out the part, and draw over the part so scraped; this must never be resorted to, for the drawing will invariably fail in that part, as may be seen at F., plate 11, where a part of the rock on the right hand has been so scraped.

126. In drawing sharp lines, or at least lines intended to be sharp, over a tint which is already laid on, it occurs frequently, from the waxy nature of the chalk, that a sort of beard or blur is formed on each side of the line, see line *a*, *a*, fig. 13, plate 4, where this blur is left. Wherever this happens, and sharpness is wanted, these small portions of chalk must be carefully picked out, as has been done with line *b*, *b*, which had when drawn a rough edge, similar to that of line *a*, *a*; the two zigzag lines have also been treated in the same way, the one

attached to *b, b*, having been picked, and the one attached to *a, a*, not altered. This blur often occurs when drawing rigging and masts of ships, on dark skies, or small buildings, spires, &c. in the distance, when placed over another tint. In all these cases these blurs, which destroy all the sharpness, must be carefully removed by picking.

127. Corrections are much easier made in ink drawings; the part may either be pumiced down with a little water, or gently scraped with a sharp scraper: great care must be taken in so doing not to produce a hollow, for that part would either not print, or at least be very defective, although looking sound on the stone, from the pressure not being felt in the hollow part when printed.

OF SOME CAUSES OF FAILURE.

128. A very common disaster in drawing on stone, is produced by persons having scurfy hair, for these small pelli-cles imbibed with grease, fall from the head on the stone, and form spots which do not shew in the least, until the drawing is printed, when they form multitudes of black specks

as seen in the sky in plate 11, marked D. D. D., &c. It is consequently a safe precaution, whether the artist's hair be greasy or not, to wear a cap of some sort while drawing on stone.

129. Spittle, when it falls on the stone, acts as gum, and hinders the chalk from adhering to the part where it has fallen, forming thereby white spots. These generally occur in attempting to blow off loose bits of chalk (def. 20), or by coughing, or sneezing, over the stone. In plate 11, at letter B., will be seen several spots of spittle, producing white spots; also in the lower part of the drawing, on the right hand side over the letter A, is a large spot of spittle which was wiped up, but has still left a faint white trace. Perspiring fingers, if they touch the face of the stone, will also form black stains, which may completely ruin a drawing, as seen in letter E. E., plate 11.

130. Scraping a grained stone, and drawing over that part again, is another cause of failure, (def. 125); this case is given at letter F.

131. Making a heavy outline with lead pencil will invariably produce a white line in the printing (def. 22); the lead pencil acting as a medium between the stone and the

chalk ; at C. C., plate 11, in the trunks of the trees, on the rock in the fore ground, in the roof of the house on the left, and in the outline of the mountains, are giving examples of this defect.

132. Using paper under the hand, instead of a bridge, (def. 14) is sure to form a tint at the bottom of the drawing, see A. A., plate 8 ; as well as the letters *a*, *a*, *a*, placed at the spots formed by loose bits of chalk, which have stuck to the paper (def. 15).

133. Rubbing out with bread crumb, or with india rubber, will ruin the part where it is applied, as at G., plate 11, where part of the tree has been rubbed out in this manner.

134. It is scarcely necessary to add to this list of disasters, that soap and water, or grease of any sort, falling on the face of the stone, will infallibly ruin the drawing ; and that spots of this nature are very treacherous, as from their containing no black, they disappear as soon as formed, to re-appear again in the printing, in the shape of tremendous black blotches.

OF PICKING A DRAWING AFTER IT IS PROVED.

135. As, from what has been said, 75, 79, and 80, it is often desirable to smooth and even tints on the stone, after a few impressions have been pulled off, from the rough and uneven appearance which they have; the picking recommended (122), must be resorted to, with this difference, that as soon as a portion has been picked, a little acid, (nitric acid diluted to the strength of vinegar) must be applied to the part so picked, with a small brush. The acid must, as much as possible, be only applied to the spot which has been picked, without allowing it to run over the other portions of the drawing surrounding it; it must be allowed to remain long enough to produce a slight action, and then immediately taken up with a small piece of damp (not wet) sponge. This precaution of applying the acid to the spot only, is not so necessary in the darker parts, where the action of the acid must be allowed to last longer, but in the fainter parts, this is an important point to attend to, for, otherwise, the consequence would be a round white spot. Where it is

desirable to remove spots, such, for example, as the spots produced by the scurf of hair (128) in a light sky, the acid must be used still weaker than recommended above, and after the part is picked, so as to be brought as faint as the surrounding tint, the acid must be applied in that part only which constituted the spot. The recommendation given (52), is highly requisite when picking a drawing which has already been prepared; for the stone in this state very easily absorbs moisture, and getting thoroughly wet, from the breath of the artist, will cause the acid, when applied, to run in every direction; the stone in every instance must be quite dry before the acid is laid on.

In picking a prepared drawing, it is also indispensable to use a bridge, 17, and never a sheet of paper; for the ink which is now on the stone, is of a much fatter nature than the chalk which constituted the drawing, and therefore the least rubbing, will smear it all over the stone.

OF PACKING STONES.

Persons residing in the country, or in distant towns, are often embarrassed as to the mode of conveying stones with drawings on them. When one drawing alone is to be sent, there is not much difficulty, although, even in this instance, I have received some which were spoiled by improper packing; but when two, or more, are to be sent together, they are often fixed with bits of wood, and small wedges, which get loose, and ruin the drawings.

Fig. 8, plate 7, gives a section of a box with two stones packed, and fig. 9, a plan. The first stone, properly papered up, must be laid in the bottom of the box, with the face, or drawing, upwards; two slips of wood, *a, a*, exactly of the same length as the width of the box, and about three-fourths of an inch broad, must be fixed at each end of the stone. These slips resting on the margin of the stone (28), and not on the drawing, cannot spoil it. It is necessary that these slips *a, a*, should be fixed, so as not to come loose during the journey; the best mode is this, through the outside of the box drive a screw, *e*, fig. 9, into each end of the slips, *a, a*; by

this means the slips can never get loose. I recommend screws instead of nails, because if the latter are used, the slips *a, a*, can only be got out by breaking the box to pieces. It is scarcely necessary to add that the slips *a, a*, must be fixed, so as to keep the stone down tight; this must be done by boring the holes for the screws *e, e*, properly, and never by using wedges, or little pieces of wood, which almost always get loose in the journey.

The slips *a, a*, being properly fixed, serve as a rest for the second stone, which must be fixed with similar slips *a, a*, and, last of all, the cover nailed down. A box thus packed, may be conveyed to any distance, without the least risk.

THE END.

Fig. 1.



Fig. n. 1

I

II 2

III 3

IV 4

V 5

VI { 6' 7

VII { 8 9

VIII { 10 11

IX { 12 13 14

X 15

Fig. 4.



B

Fig. 10.



E

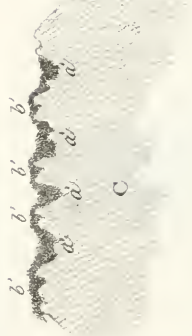
Fig. 5.



Fig. 2.



Fig. 6.



C

Fig. 3.



F

Fig. 7.



Fig. 8.



Fig. 9.



Fig. 2



Fig. 1



Fig. 11



Fig. 12



Fig. 13

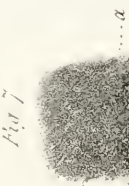


Fig. 14



Fig. 15



Fig. 16

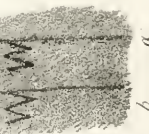


Fig. 17



Fig. 18



Fig. 19



Fig. 20

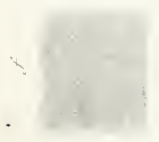




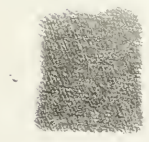
Fig. 1



Fig. 2



f



d

e

b

a

Fig. 3

Fig. 4

Fig 2

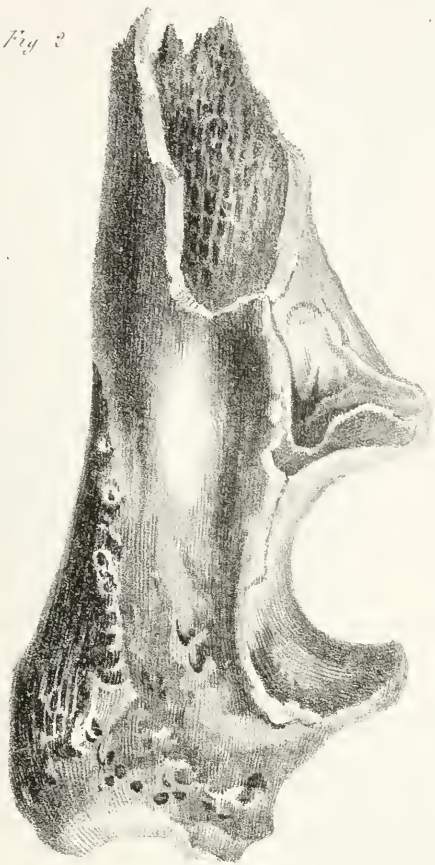


Fig 1



Fig 3



Fig. 2.

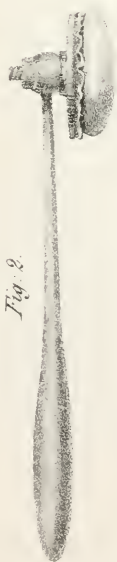


Fig. 4.



Fig. 3.



Fig. 1.

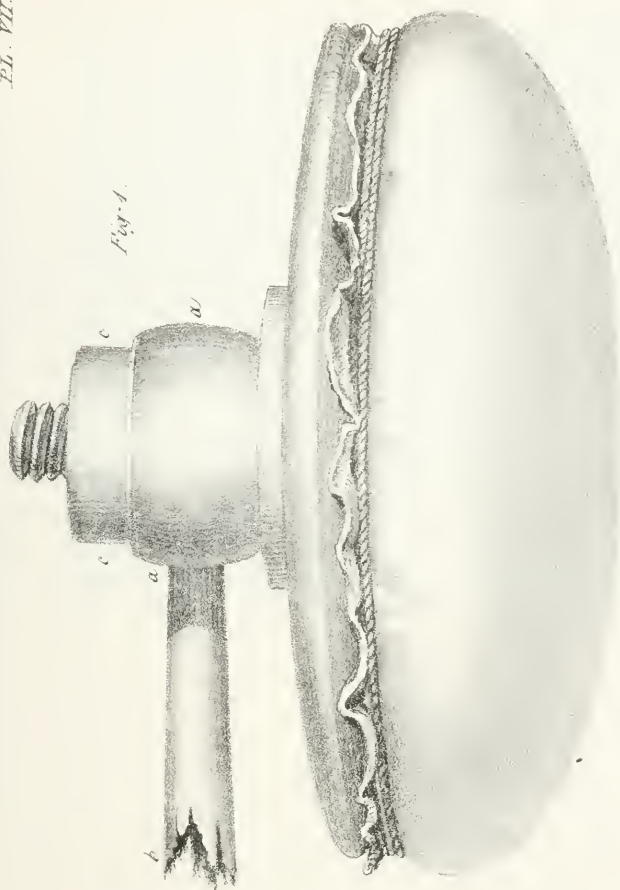


Fig. 9.

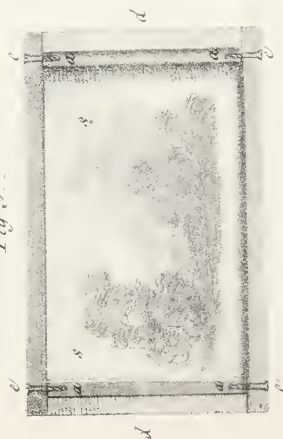


Fig. 5.

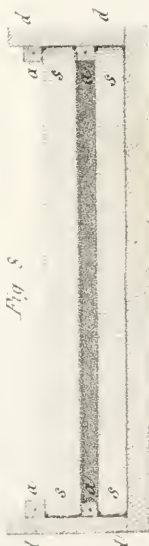


Fig. 7.



Fig. 6.



Fig. 8.



Fig. 2.



Fig. 1.

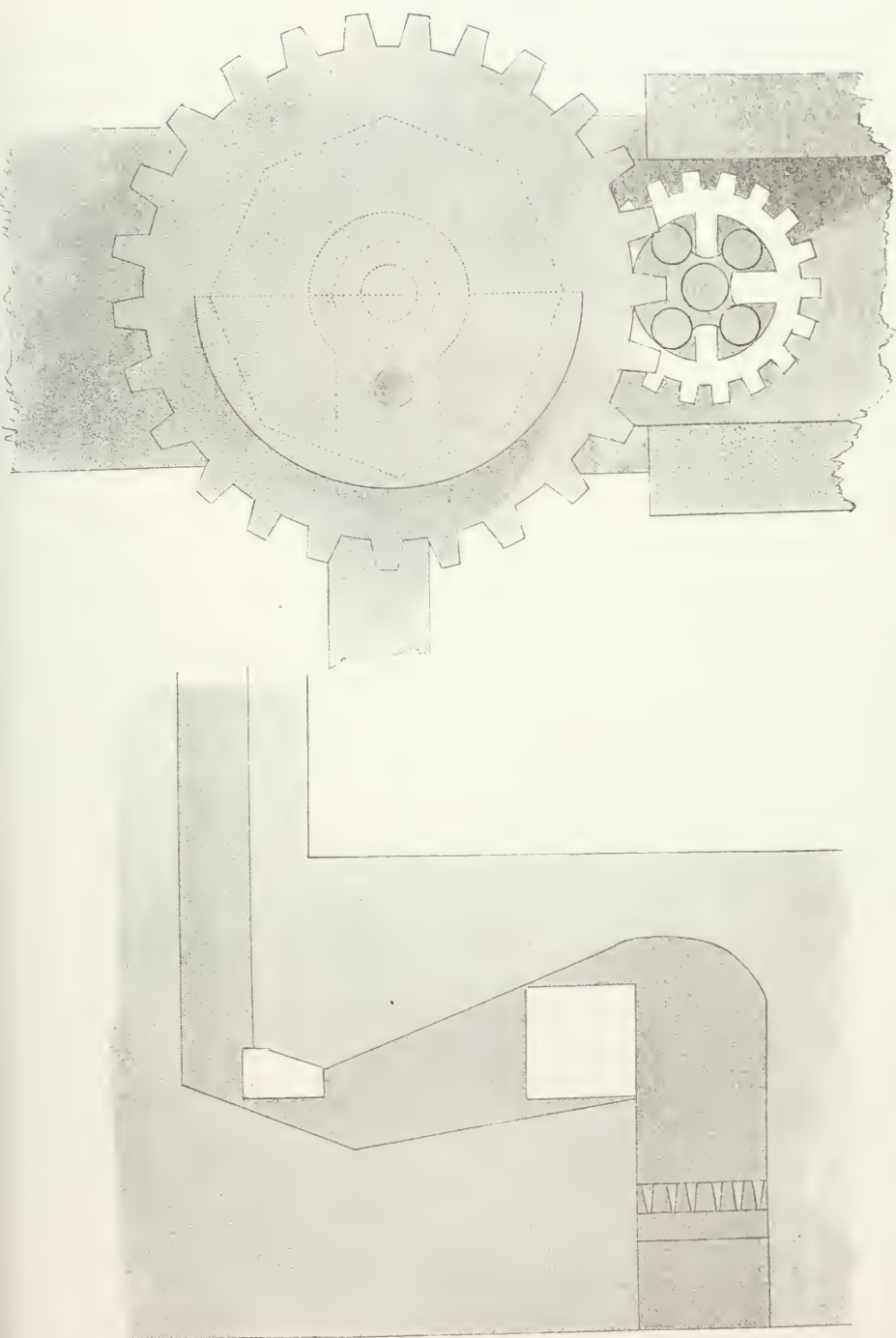


Fig. 2



Fig. 1







London.

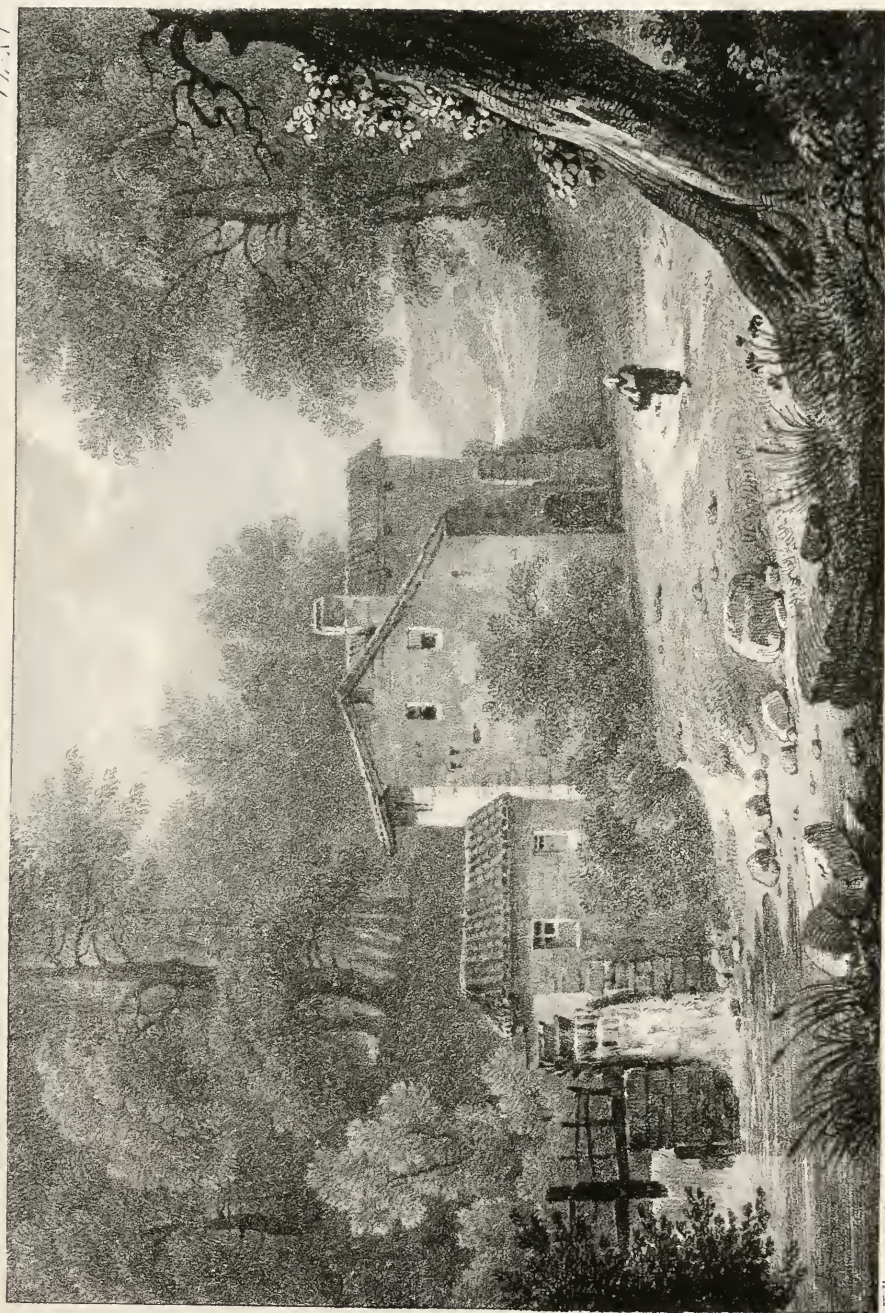
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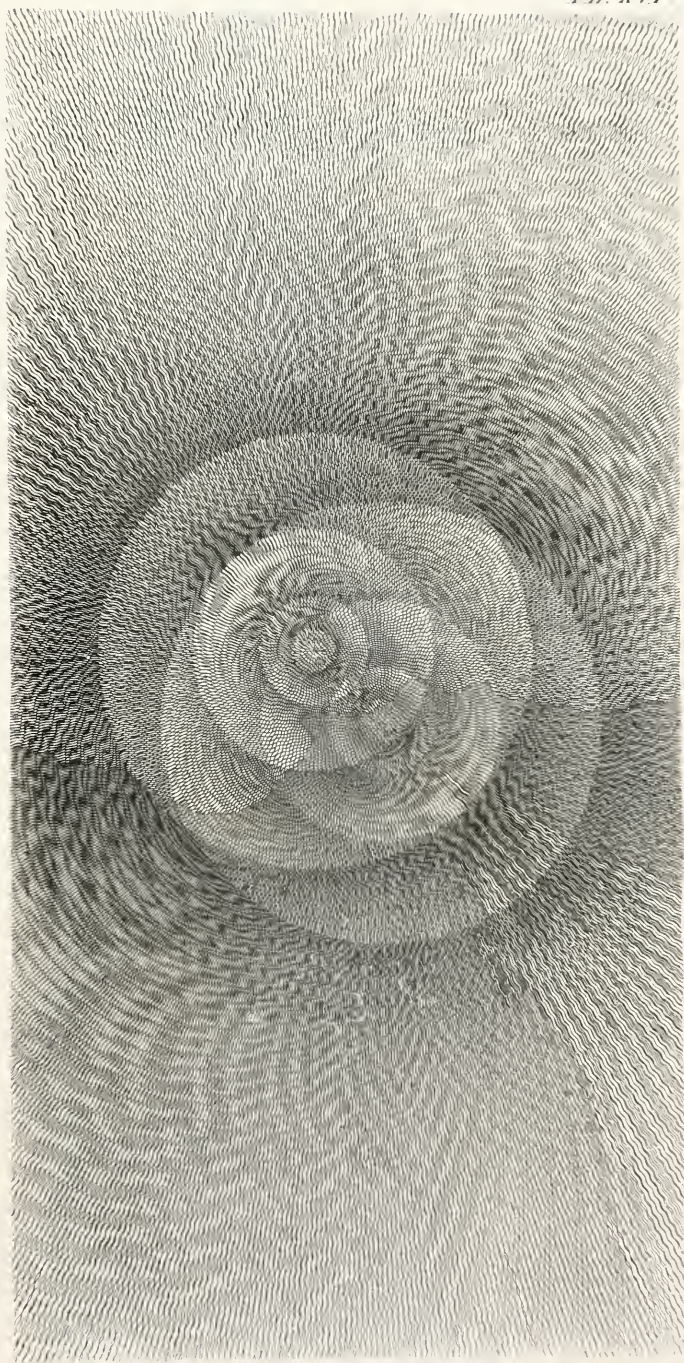




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Napoleon

avec le bagage
courge et les
armées de
détachement

(Signature)

Bayonne, le 25. avril
1808.

Murat

J'ai l'honneur, Monsieur le
Maréchal, de vous saluer
(Signature)

Beaubarnois

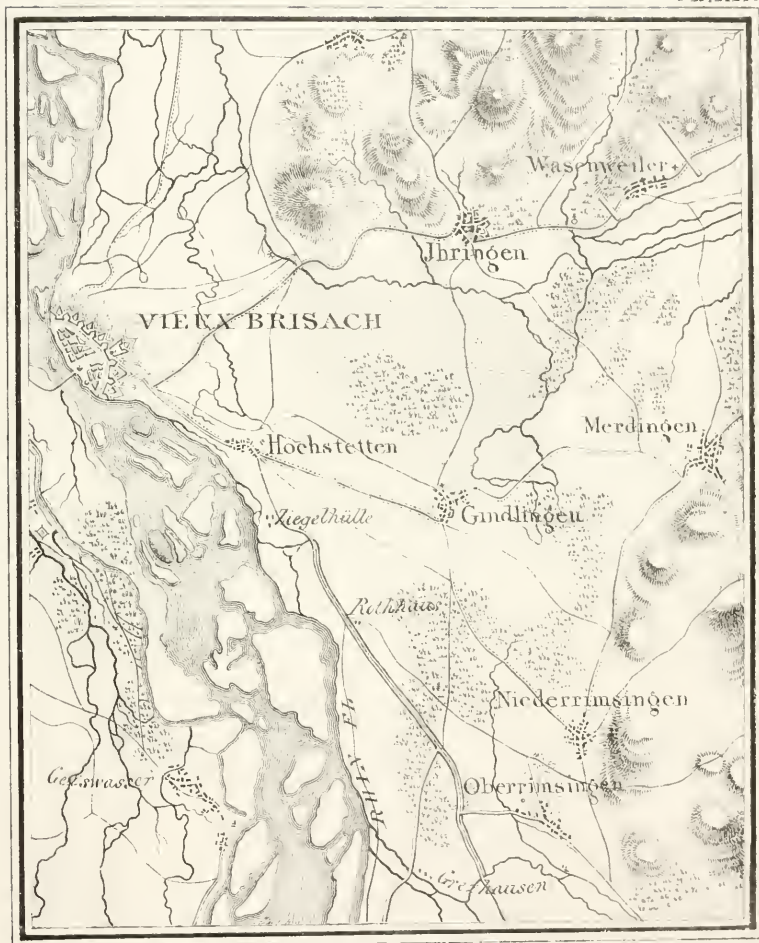
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